

REMARKS

Claims 1-13 and 16 are pending for further examination. Claim 1 is currently amended. Claims 14-15 are withdrawn as a result of a previous restriction requirement. Support for the amendment can be found in the present specification in the examples disclosed on pages 12-13 and in FIGS. 5-6. This amendment accompanies a Request for Continued Examination (RCE). Applicants respectfully request entry and consideration of all claim amendments.

Examiner Interview

Applicants thank the Examiner for participating in telephonic interviews with Mr. Joseph Valentino on January 29, March 1, March 3 and March 4, 2010, during which Mr. Valentino proposed amending independent claim 1. In particular, Mr. Valentino proposed amending claim 1 to recite, in part:

...the control unit is adapted to operate the electrical heaters and the water purging device when a power generation stop command for stopping the power generation operation in the solid polymer electrolyte fuel cell stack is output to maintain a uniform temperature and uniform relative humidity across the fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the ends of the fuel cell stack.

Mr. Valentino pointed out that neither of the references cited by the Office, alone or in combination with one another, discloses or renders obvious a control unit adapted to operate electrical heaters and a water purging device, when a power generation stop command is output, "to maintain a uniform temperature and uniform relative humidity across" fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the ends of the fuel cell stack. Mr. Valentino noted that by maintaining a uniform temperature and relative humidity across fuel cell units, the present invention enables the amount of water held in each of the fuel cell units to be made substantially equal to each other such that, in some implementations, water can be uniformly discharged from the fuel cells. The Examiner requested that Mr. Valentino fax a draft of the proposed claim amendment so that the Examiner may discuss the matter further with her

supervisor. Mr. Valentino provided the Examiner with a copy of the proposed claim amendment by fax on January 29, 2010.

Following a review of the proposed claims and discussion with her supervisor, the Examiner contacted Mr. Valentino to inquire whether the uniform temperature was applied to each fuel cell unit or to all fuel cell units. Mr. Valentino noted that the proposed claims require maintaining a uniform temperature “across the fuel cell units” and explained that the proposed amendment was supported by the Applicants’ specification. After further consideration, the Examiner indicated that, based on the art of record, the proposed amendments overcome the present rejections. The Examiner further indicated that the proposed amendments should be submitted in a written response to the Office action and would be entered if accompanied by an RCE. The Examiner noted that an additional prior art search will need to be performed and that such a search may result in new claim rejections.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-13 and 16 are rejected under U.S.C. § 103(a) as allegedly unpatentable over the Roberts et al. reference (U.S. Patent App. Pub. No. 2005/0112418) in view of the Guthrie et al. patent (U.S. Patent No. 5,009,968). In view of the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and allowance of the claims.

Independent claim 1 is currently amended to recite a control apparatus for a fuel cell stack that includes, in part, a control unit adapted to operate electrical heaters and a water purging device, when a power generation stop command is output, “to maintain a uniform temperature and uniform relative humidity across” fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the ends of the fuel cell stack. In contrast, none of the cited references, alone or in combination, discloses or renders obvious the subject matter of pending claim 1.

The Roberts et al. reference discloses a fuel cell electric power generation system that includes a fuel cell stack 210 (*see* FIG. 3). The Roberts et al. reference also discloses a method of expediting the warming of a fuel cell stack to a desired operating temperature range when the fuel cell stack is started (*see* ¶ [0036]). The method includes heating the fuel cell using an externally powered heater and allowing coolant to flow to the fuel cell stack only after the

operating temperature of the stack has exceeded a predetermined temperature threshold (*see* ¶¶ [0038], [0048]). Although the Roberts et al. reference discloses using an externally powered heater to heat the fuel cell, it fails to disclose a control unit adapted to operate the electrical heater and a water purging device to “maintain a uniform temperature and uniform relative humidity across” fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the ends of the fuel cell stack, “when a power generation stop command is output,” as recited in pending claim 1. Nor does the Roberts et al. reference support any reason to modify a control unit so that it operates the electrical heater to maintain a uniform temperature and uniform relative humidity across” fuel cell units, when a power generation stop command is output.

The Guthrie et al. patent, which the Office relies on for the claimed “control unit,” discloses a molten carbonate fuel cell assembly 10 that operates at temperatures ranging from 590°C to 700°C (*see* col. 3, lines 8-10 and FIG. 1). The fuel cell assembly 10 includes a stack 12 of fuel cells 14. The end plates of the outermost fuel cells in the stack 12 are thin membranes 16. Beyond each thin membrane 16 is a rigid pressure plate 20, a first section 22 of semi-rigid thermal insulation and a second portion 26 of semi-rigid thermal insulation. An electrical heater 24 is between the first 22 and second 26 portions of semi-rigid thermal insulation (*see* col. 3, lines 22-24). The Guthrie et al. patent fails, however, to disclose or render obvious the subject matter missing from the Roberts et al. reference. In particular, the Guthrie et al. patent fails to disclose a control unit adapted to operate the electrical heater and a water purging device to “maintain a uniform temperature and uniform relative humidity across” fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the ends of the fuel cell stack, “when a power generation stop command is output,” as recited in pending claim 1. Nor does the Guthrie et al. patent support any reason to modify the device of the Roberts et al. reference so as to obtain the subject matter of pending claim 1.

For at least the foregoing reasons, independent claim 1 should be allowed.

Claims 2-13 and 16 depend from claim 1 and should be allowed for at least the same reasons as claim 1.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The fee for the RCE is being paid herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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